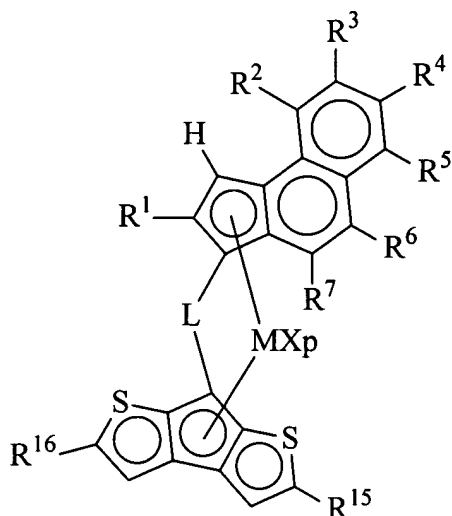




ATTACHMENT A

Claims 1 - 23: (Cancelled)

24. (Previously Presented) A metallocene compound comprising formula (IV):



(IV)

wherein:

- M is a transition metal selected from group 3, 4, 5, 6 or a lanthanide or an actinide group in the Periodic Table of Elements;
- p is an integer from 0 to 3, wherein p is equal to a formal oxidation state of M minus 2;
- X, is the same or different, and is hydrogen, a halogen, R, OR, OSO₂CF₃, OCOR, SR, NR₂ or PR₂, wherein R is a C₁-C₄₀ hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements; or two X can optionally form a substituted or unsubstituted butadienyl radical, or a OR'O group, wherein R' is a divalent radical selected from a C₁-C₄₀ alkylidene radical, a C₆-C₄₀ arylidene

radical, a C₇-C₄₀ alkylarylidene radical and a C₇-C₄₀ arylalkylidene radical;

- L is a divalent bridging group selected from a C₁-C₂₀ alkylidene radical, a C₃-C₂₀ cycloalkylidene radical, a C₆-C₂₀ arylidene radical, a C₇-C₂₀ alkylarylidene radical, or a C₇-C₂₀ arylalkylidene radical optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements, or a silylidene radical comprising up to 5 silicon atoms;

- R¹ is a C₁-C₄₀ hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;

- R³ is a C₁-C₄₀ hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;

- R², R⁴ and R⁵, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements, with the proviso that at least one among R², R⁴ and R⁵ is hydrogen;

- R⁶ and R⁷, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;

- R¹⁵ and R¹⁶, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements; and

- R³ with R⁴ and/or R⁴ with R⁵ can optionally join to form a aliphatic or aromatic 3-7 membered ring optionally comprising at least one heteroatom belonging to groups

13-16 of the Periodic Table of Elements, the aliphatic or aromatic 3-7 membered ring optionally can comprise one or more hydrocarbon substituents comprising from 1 to 20 carbon atoms.

25. (Previously Presented) The metallocene compound of claim 24, wherein:

- M is titanium, zirconium or hafnium;
- p is 2;
- R is a linear or branched, cyclic or acyclic C₁-C₄₀-alkyl radical, C₂-C₄₀ alkenyl radical, C₂-C₄₀ alkynyl radical, C₆-C₄₀-aryl radical, C₇-C₄₀-alkylaryl radical or C₇-C₄₀-arylalkyl radical, optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;
- X is hydrogen, a halogen, or R;
- L is Z(R'')₂, wherein Z is a carbon or a silicon atom, and R'' is a linear or branched, cyclic or acyclic C₁-C₁₀-alkyl radical, C₂-C₁₀ alkenyl radical, C₂-C₁₀ alkynyl radical, C₆-C₁₀-aryl radical, C₇-C₁₀-alkylaryl radical, or C₇-C₁₀-arylalkyl radical optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements.

26. (Previously Presented) The metallocene compound of claim 24, wherein:

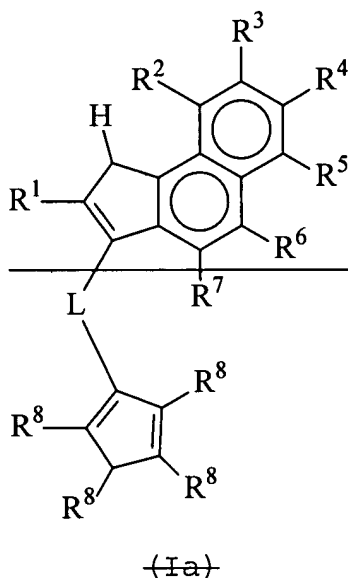
- R¹ is a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical;
- R³ is a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical or a C₆-C₄₀-aryl, radical;
- R², R⁴ and R⁵ are hydrogen; and

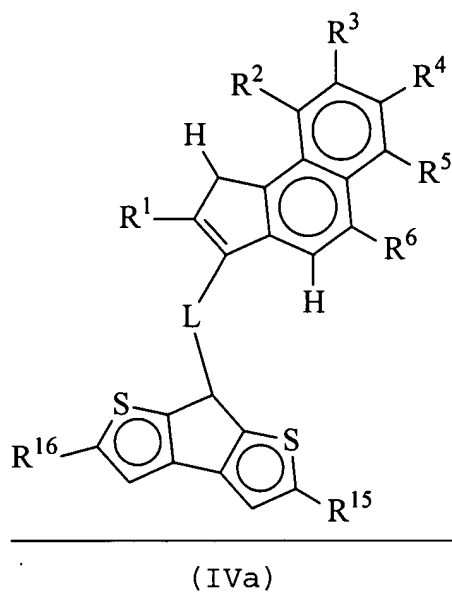
- R⁶ and R⁷ are hydrogen or a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical.

27. (Previously Presented) The metallocene compound according to claim 24, wherein R¹⁵ and R¹⁶ are linear or branched C₁-C₄₀-alkyl radicals optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements.

28. (Currently Amended) A process for preparing a metallocene compound of formula [(I)] (IV) comprising:

- contacting a compound of formula [(Ia)] (IVa)





and/or its double bond isomers with a base selected from T_jB , $TMgT^1$, sodium hydride, potassium hydride, metallic sodium, metallic potassium, and combinations thereof, wherein:

- L is a divalent bridging group selected from a C_1 - C_{20} alkylidene radical, a C_3 - C_{20} cycloalkylidene radical, a C_6 - C_{20} arylidene radical, a C_7 - C_{20} alkylarylidene radical, or a C_7 - C_{20} arylalkylidene radical optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements, or a silylidene radical comprising up to 5 silicon atoms;
- R^1 is a C_1 - C_{40} hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;
- R^3 is a C_1 - C_{40} hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;
- R^2 , R^4 and R^5 , are the same or different from each other, and are hydrogen or C_1 - C_{40} hydrocarbon groups optionally comprising at least one heteroatom belonging

to groups 13-17 of the Periodic Table of Elements, with the proviso that at least one among R^2 , R^4 and R^5 is hydrogen;

- R^6 and R^7 , are the same or different from each other, and are hydrogen or C_1 - C_{40} hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;

- R^{15} and R^{16} , are the same or different from each other, and are hydrogen or C_1 - C_{40} hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements; and

- R^3 with R^4 and/or R^4 with R^5 can optionally join to form a aliphatic or aromatic 3-7 membered ring optionally comprising at least one heteroatom belonging to groups 13-16 of the Periodic Table of Elements, the aliphatic or aromatic 3-7 membered ring optionally can comprise one or more hydrocarbon substituents comprising from 1 to 20 carbon atoms.

~~— L is a divalent bridging group selected from a C_1 - C_{20} alkylidene radical, a C_3 - C_{20} cycloalkylidene radical, a C_6 - C_{20} arylidene radical, a C_7 - C_{20} alkylarylidene radical, or a C_7 - C_{20} arylalkylidene radical optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements, or a silylidene radical comprising up to 5 silicon atoms;~~

~~— R^1 is a C_1 - C_{40} hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;~~

~~— R^3 is a C_1 - C_{40} hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;~~

~~—R², R⁴ and R⁵, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements, with the proviso that at least one among R², R⁴ and R⁵ is hydrogen;~~

~~—R⁶ and R⁷, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;~~

~~—R⁸, are the same or different from each other, and are hydrogen or C₁-C₅₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements, or two or more R⁸ optionally can join together to form at least one 3-7 membered ring, the 3-7 membered ring comprising at least one heteroatom belonging to groups 13-16 of the Periodic Table of Elements; and the 3-7 membered ring optionally can be substituted with at least one C₁-C₂₀ hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements; and~~

~~—R³ with R⁴ and/or R⁴ with R⁵ can optionally join to form a aliphatic or aromatic 3-7 membered ring optionally comprising at least one heteroatom belonging to groups 13-16 of the Periodic Table of Elements, the aliphatic or aromatic 3-7 membered ring optionally can comprise one or more hydrocarbon substituents comprising from 1 to 20 carbon atoms;~~

- B is an alkali or alkaline earth ~~alkaline or alkali~~ earth metal;

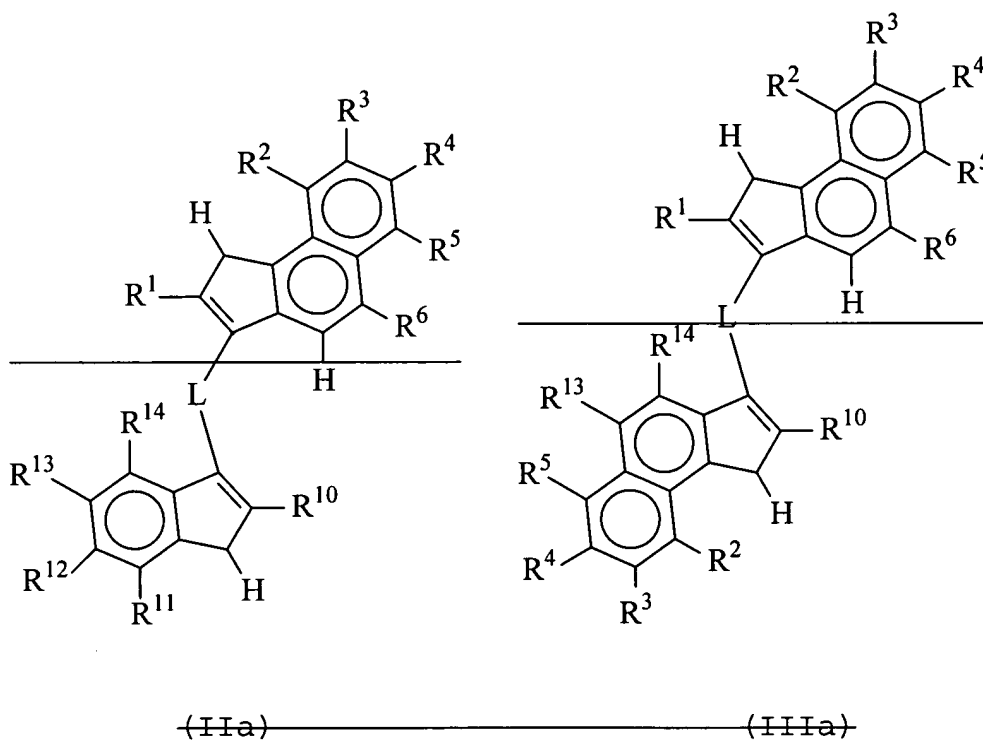
- j is 1 or 2, wherein j is equal to 1 when B is an alkaline metal, and j is equal to 2 when B is an alkali-earth metal;
- T is a linear or branched, cyclic or acyclic C₁-C₂₀-alkyl radical, C₆-C₂₀-aryl radical, C₇-C₂₀-alkylaryl radical, or C₇-C₂₀-arylalkyl radical, optionally comprising one or more Si or Ge atoms;
- T¹ is a halogen or OR''', wherein R''' is a linear or branched, cyclic or acyclic C₁-C₄₀-alkyl radical, C₆-C₄₀-aryl radical, C₇-C₄₀-alkylaryl radical or C₇-C₄₀-arylalkyl radical, optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements to form a metallocene compound product, wherein a molar ratio between the base and a ligand of the formula [(Ia)] (IVa) is at least 2:1; and
- contacting the metallocene compound product with a compound of formula MX_{p+2}, wherein:
 - M is a transition metal selected from group 3, 4, 5, 6 or a lanthanide or an actinide group in the Periodic Table of Elements;
 - p is an integer from 0 to 3, wherein p is equal to a formal oxidation state of M minus 2; and
 - X, is the same or different, and is hydrogen, a halogen, R, OR, OSO₂CF₃, OCOR, SR, NR₂ or PR₂, wherein R is a C₁-C₄₀ hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements; or two X can optionally form a substituted or unsubstituted butadienyl radical, or a OR'O group, wherein R' is a divalent radical selected from a C₁-C₄₀ alkylidene radical, a C₆-C₄₀ arylidene radical, a C₇-C₄₀ alkylarylidene radical and a C₇-C₄₀ arylalkylidene radical.

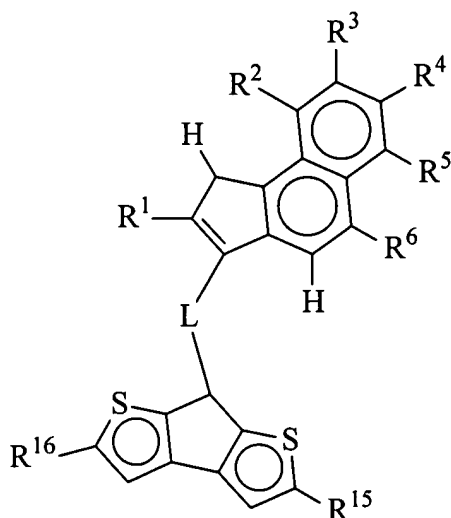
29. (Previously Presented) The process for preparing the metallocene compound of claim 28, wherein B is lithium.

30. (Previously Presented) The process for preparing the metallocene compound of claim 28, wherein T is a methyl radical or butyl radical.

31. (Cancelled)

32. (Currently Amended) A ligand of formula ~~comprising formulas (IIa), (IIIa) and (IVa) and/or their~~ and its double bonds isomers





(IVa)

wherein:

- L is a divalent bridging group selected from a C₁-C₂₀ alkylidene radical, a C₃-C₂₀ cycloalkylidene radical, a C₆-C₂₀ arylidene radical, a C₇-C₂₀ alkylarylidene radical, or a C₇-C₂₀ arylalkylidene radical optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements, or a silylidene radical comprising up to 5 silicon atoms;
- R¹ is a C₁-C₄₀ hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;
- R³ is a C₁-C₄₀ hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;
- R², R⁴ and R⁵, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements, with the proviso that at least one among R², R⁴ and R⁵ is hydrogen;

-R⁶, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;

- R³ with R⁴ and/or R⁴ with R⁵ can optionally join to form a aliphatic or aromatic 3-7 membered ring optionally comprising at least one heteroatom belonging to groups 13-16 of the Periodic Table of Elements, the aliphatic or aromatic 3-7 membered ring optionally can comprise one or more hydrocarbon substituents comprising from 1 to 20 carbon atoms; and

~~-R¹⁰ is hydrogen or a C₁-C₄₀ hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;~~

~~-R¹¹, R¹², R¹³ and R¹⁴, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements, or two adjacent R¹¹, R¹², R¹³ and R¹⁴ can optionally join to form a 3-7 membered ring optionally comprising at least one heteroatom belonging to groups 13-16 of the Periodic Table of Elements, the 3-7 membered ring optionally can comprise one or more hydrocarbon substituents comprising from 1 to 20 carbon atoms; and~~

- R¹⁵ and R¹⁶, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements.

33. (Currently Amended) The ligand of claim 32, wherein:

~~-M is titanium, zirconium or hafnium;~~

~~-p is 2;~~

~~———— R is a linear or branched, cyclic or acyclic C₁-C₄₀-alkyl radical, C₂-C₄₀-alkenyl radical, C₂-C₄₀-alkynyl radical, C₆-C₄₀-aryl radical, C₇-C₄₀-alkylaryl radical or C₇-C₄₀-arylalkyl radical, optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;~~

~~———— X is hydrogen, a halogen, or R;~~

- L is Z(R'')₂, wherein Z is a carbon or a silicon atom, and R'' is a linear or branched, cyclic or acyclic C₁-C₁₀-alkyl radical, C₂-C₁₀ alkenyl radical, C₂-C₁₀ alkynyl radical, C₆-C₁₀-aryl radical, C₇-C₁₀-alkylaryl radical, or C₇-C₁₀-arylalkyl radical optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;

34. (Previously Presented) The ligand of claim 32, wherein:

- R¹ is a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical;

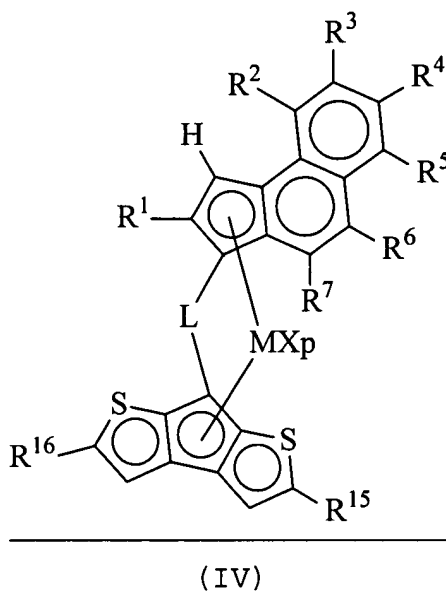
- R³ is a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical or a C₆-C₄₀-aryl, radical;

- R², R⁴ and R⁵ are hydrogen; and

- R⁶ and R⁷ are hydrogen or a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical.

35. (Currently Amended) A catalyst system obtained by contacting:

- a) at least one metallocene compound of formula (IV)
~~(I)~~;



wherein:

- M is a transition metal selected from group 3, 4, 5, 6 or a lanthanide or an actinide group in the Periodic Table of Elements;
- p is an integer from 0 to 3, wherein p is equal to a formal oxidation state of M minus 2;
- X, is the same or different, and is hydrogen, a halogen, R, OR, OSO₂CF₃, OCOR, SR, NR₂ or PR₂, wherein R is a C₁-C₄₀ hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements; or two X can optionally form a substituted or unsubstituted butadienyl radical, or a OR'O group, wherein R' is a divalent radical selected from a C₁-C₄₀ alkylidene radical, a C₆-C₄₀ arylidene radical, a C₇-C₄₀ alkylarylidene radical and a C₇-C₄₀ arylalkylidene radical;
- L is a divalent bridging group selected from a C₁-C₂₀ alkylidene radical, a C₃-C₂₀ cycloalkylidene radical, a C₆-C₂₀ arylidene radical, a C₇-C₂₀ alkylarylidene radical, or a C₇-C₂₀ arylalkylidene radical optionally comprising at least one heteroatom belonging to groups 13-17 of the

Periodic Table of Elements, or a silylidene radical comprising up to 5 silicon atoms;

- R¹ is a C₁-C₄₀ hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;

- R³ is a C₁-C₄₀ hydrocarbon group optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;

- R², R⁴ and R⁵, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements, with the proviso that at least one among R², R⁴ and R⁵ is hydrogen;

-R⁶ and R⁷, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements;

- R¹⁵ and R¹⁶, are the same or different from each other, and are hydrogen or C₁-C₄₀ hydrocarbon groups optionally comprising at least one heteroatom belonging to groups 13-17 of the Periodic Table of Elements; and

- R³ with R⁴ and/or R⁴ with R⁵ can optionally join to form a aliphatic or aromatic 3-7 membered ring optionally comprising at least one heteroatom belonging to groups 13-16 of the Periodic Table of Elements, the aliphatic or aromatic 3-7 membered ring optionally can comprise one or more hydrocarbon substituents comprising from 1 to 20 carbon atoms;

b) at least one alumoxane, or a compound able to form an alkylmetallocene cation; and

c) optionally an organo aluminium compound.

36. (Cancelled)

37. (Previously Presented) A process for (co)polymerizing olefins comprising from 2 to 20 carbon atoms comprising contacting one or more of the olefins under polymerization conditions in presence of the catalyst system of claim 35.

38. (Cancelled)

39. (Previously Presented) The process according to claim 37, wherein the olefins are alpha-olefins comprising from 2 to 20 carbon atoms.

40. (Cancelled)

41. (Previously Presented) The process according to claim 37, wherein the olefins are selected from propylene, ethylene, 1-butene, and combinations thereof.

42. (Cancelled)